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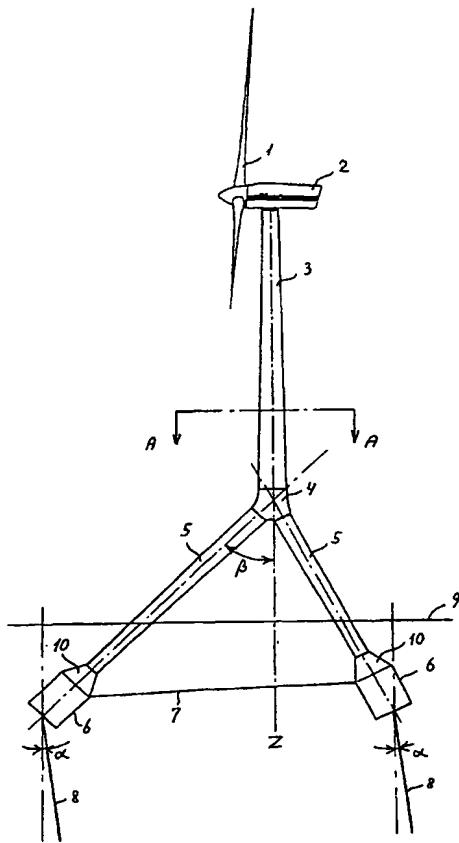
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(54) Title: WIND TURBINE WITH FLOATING FOUNDATION



(57) Abstract: A floating foundation for wind turbines is disclosed, where the foundation essentially comprises at least three submerged buoyancy bodies connected to the lower end of the tower of the wind turbine at a common node member situated well above the surface of the sea. The buoyancy bodies are connected to the node member by means of relatively thin leg sections, whereby wave load on the foundation is reduced. By applying the foundation according to the present invention, stress concentrations and torques in the node member are reduced, whereby it becomes possible to apply a relatively lightweight and hence cheap node member. The overall weight of the construction is thereby reduced and hence the volume of the buoyancy bodies necessary to counteract the overall weight of the construction.

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 174 336 A (MAIERFORM MARITIME TECHNOLOGY) 23 January 2002 (2002-01-23) figures 1,3,5	1-6, 10-12 7-14
Y	DE 101 01 405 A (BRIESE REMMER) 18 July 2002 (2002-07-18) figure 1; examples 1A,1B	7-14
E	GB 2 378 679 A (BONE DAVID ;OCEAN TECHNOLOGIES LTD (GB)) 19 February 2003 (2003-02-19) figures 1-3 abstract	7,10-12
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		<input checked="" type="checkbox"/> Patent family members are listed in annex.
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Authorized officer ANNA R-SALOMONSSON/EL	

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PCT/DK 03/00002**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DATABASE WPI Section PQ, Week 200174 Derwent Publications Ltd., London, GB; Class Q55, AN 2001-642504 XP002250517 & JP 2001 248535 A (KAJIMA CORP), 14 September 2001 (2001-09-14) abstract -----	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/DK 03/00002

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 1174336	A	23-01-2002	DE	10034847 A1		14-02-2002
			DE	20100474 U1		10-05-2001
			EP	1174336 A1		23-01-2002
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DE 10101405	A	18-07-2002	DE	10101405 A1		18-07-2002
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GB 2378679	A	19-02-2003		NONE		
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JP 2001248535	A	14-09-2001		NONE		
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